

Thoughts on the  
**Business Plan**  
for the  
**Canadian Geospatial Data Infrastructure<sup>1</sup>**

[\(<http://geoconnections.org>\)](http://geoconnections.org)

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## **1.0. Introduction:**

A business plan attempts to present a convincing argument for an undertaking. Such an undertaking may be a new project, a continuing operation or even the dismantling of an earlier project that has outlived its usefulness. A business plan is tailored to the audience to whom the proposal is being made; thus, the business plan presented to a financial institution will be considerably different than that of a project presented by a government agency interested in fulfilling its mandate for the public good. Although these plans often reduce to questions of capacities (resources), business plans appearing at highest level in the Canadian Government examine the benefits to the sponsoring institution, particular communities<sup>2</sup> and the Canadian citizen,

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<sup>1</sup> Presented at:

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<sup>2</sup> Communities is used in its broadest sense: physical, environmental, economic, social and cultural entities are included.

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as well as the position of the proposed program in the spectrum of programs in place and being proposed by other agencies.

The business case for the Canadian Geospatial Data Infrastructure (CGDI) is thus a document that addresses the Canadian process and the Canadian perspective on issues. This does not mean that the Canadian business case contains peculiarly Canadian arguments or has led the Canadian government to support an unusual form of geospatial information infrastructure. Though the path may have been different, the CGDI borrows a great deal from the concepts underlying the National Spatial Data Infrastructure of the United States and is similar to those being built in Australia and elsewhere.

Infrastructure is a complex concept. It is a challenge to maintain focus and clarity in discussions that explore its fundamental nature<sup>3</sup>:

- an infrastructure is difficult to define because there are numerous, but equally valid, perspectives on what the infrastructure might be, how it might work, who might participate, in what ways and when. Thus, it can be difficult to state the vision, specify the characteristics, scope the operation and agree on the benefits. A structured design process can be helpful in working through the definition of a complex system concept. The Digital Earth Reference Model (<http://www.digitalearth.gov/tech/>) is an attempt to define the step beyond a Global Spatial Data Infrastructure.
- infrastructures are thought of as large. Infrastructures are assembled from smaller similar infrastructures as well as materials and services drawn from other infrastructures. For example: the transportation, financial, energy, telecommunications and municipal infrastructures are drawn upon by a shopping centre which is but one part of a commercial distribution infrastructure. While an infrastructure can serve its own clients in its own ways, the interfaces between infrastructures have to be established by means of standards and protocols, in order for the larger assembly (network) to function, grow and evolve efficiently.

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<sup>3</sup> Some of the ideas in this list were presented by Neil Anderson during panel discussions at the 1<sup>st</sup> Global Spatial Data Infrastructure Conference, September 1996, Konigwinter, Germany. (Mr. Anderson is now working with the Canada Centre for Marine Communications, St. John's, Newfoundland to develop the Marine Node of the Canadian Geospatial Data Infrastructure).

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- infrastructures are costly to build. Governments are often involved in the early stages of development and implementation when it is not possible to make an economic case for the infrastructure in a timeframe of interest to the private sector. Whether the infrastructure is a proposition of government or the private sector, most infrastructures assume a monopoly on related goods, services and revenue to finance the initial development and early operations.
- infrastructures take a long time to build, and as a consequence, infrastructures evolve with time. The vision, the participants, the services, the implementation and the benefits all change in response to different stimuli and at different times.
- the most significant benefits of an infrastructure are often not apparent or not accepted at the outset. The secondary and tertiary benefits are remote and hard to quantify by the builders and early adopters of the infrastructure. Curiously, the success of an infrastructure is measured less by its own performance and more by the success of products and services that exploit it subsequently.

Thus, infrastructures are proposed by visionaries and built on faith.

### **2.0. Principles of the Canadian Geospatial Data Infrastructure (CGDI):**

Rather than attempt to say what it is, or to give it any explicit attributes, the business case for CGDI was built on only five principles:

- client centered access to government information.
- which is built on a common national framework.
- using international standards.
- collected by agencies in cost-efficient partnerships.
- provided seamlessly to users within a co-ordinated supportive policy environment.

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Though the specific wording of these principles has been adjusted somewhat over the past 3 years, the underlying sentiment is unchanged. Everyone associated with the GeoConnections Program which is building the CGDI, is familiar with these five principles as they are the foundation for every project proposal, policy discussion and management decision. Clearly, all five principles do not weigh equally in every decision, but program integrity is maintained through the consistent application of these principles. The consistent application of these principles has aided also in the articulation of the consensus that is essential for the concept of a distributed infrastructure to advance.

Early documents described the CGDI in terms of enabling interactions between data and clients; however, these principles do not mention applications of the geospatial information that is compiled or accessed through the infrastructure. The intent being that the custodians would make their data and services accessible through the infrastructure, rather than the infrastructure itself assuming responsibility for the management of the data and services other than a few framework data sets and core services (e.g. the discovery services). It is almost always government agencies or the private sector which deliver data, services and applications services to their clients (increasingly making use of core CGDI services). Nevertheless, the business case was illustrated with examples of how the infrastructure would facilitate and expand the use of geospatial data in a wide variety of situations.

### **3.0. Building the CGDI through the GeoConnections Program:**

The creation of an explicit target vision and architecture has proven to be difficult. It is now more than 3 years since work began in earnest on the CGDI and a high level vision document for general release is only just being completed. This can be attributed to the diversity of opportunity that the early supporters see in a geospatial information infrastructure.

The GeoConnections Program has put in place a comprehensive set of advisory committees that fall into three broad categories: technical (technology and standards, discovery and access, data frameworks), policy (data distribution, human resource requirements), applications (the Atlas of Canada, natural hazards, sustainable development and natural resources, sustainable communities). These are supported by a secretariat which also runs the

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industrial support program (for both technology and applications), provincial relations and a skills network. The entire GeoConnections Program reports to a management board made up of representatives of federal government, provincial and territorial governments, industry academia and the aboriginal community.

It has always been clear that the success of the CGDI would be measured ultimately by the data sets that were accessible through it and the applications that made use of these data. Even without an explicit vision a variety of activities have been initiated under the GeoConnections Program. For each of these, performance measures have been established: more detailed in the current year and aiming to more general achievements in later years.

The effort expended in a vision statement also revealed that in order to be inclusive, the infrastructure has to be able to interact with a variety of local infrastructures that may not all be built the same way or serve their clients in the same way. Some peer infrastructures make use of international standards, some use proprietary commercial standards, and others have grown from in-house initiatives serving specialized clients. In other words, the CGDI was a partnership and that serious engineering would be required to connect peer infrastructures interoperably to form the CGDI.

Framework data has been defined and work has started building consistent national coverages for the fundamental themes. There will be a medium density (and accuracy) framework that is comparable to the base mapping that has been done in the past by the federal and provincial governments at a scales of 1:50k and larger. This framework will be complemented by a national real-time differential GPS correction system and a complete set of Landsat-7 ortho-images. The second framework will be constructed at a density appropriate for presentation at a scale of 1:1M. This framework is of particular use in the analysis and representation of national scale issues. It is this framework that will be contributed to the Global Map.

The GeoConnections Program catalyses the partnerships dimension of the CGDI by contributing policy studies, technological components, core services and providing partial funding for initiatives that build the CGDI or applications of it.

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Throughout the GeoConnections Program there are numerous examples of the application of CGDI principles:

- for data and services to be considered part of the CGDI, the meta-data describing such products and services will be published, maintained and made publicly accessible. (This particular statement constrains the CGDI to non-confidential data sets. It does not prevent the use of CDGI technology in secure areas or meta-data for sanitised views of confidential to be published made visible in the CGDI.)
- meta data and discovery services that are part of the CGDI will be accessible at no cost. This does not direct the data custodian or service provider to any particular distribution model, or pricing scheme for the actual products and services.
- future releases of software supporting the discovery services will support the emerging standards (e.g. ISO 19115 – meta-data and the specifications being developed by the Open GIS Consortium).
- low density framework data in Canada will be easily accessible and distributed at no charge. This may be extended to all framework data sets.

This list is expanding continuously as a broadening community participates in policy studies and offers information through the CGDI.

### **4.0. Beyond the present:**

The GeoConnections Program is a 6 year program that has been active for 2 years. Already strategies are being examined to obtain continuing support for specific core activities and to re-orient the policy and programs of data custodians and service providers in the federal and provincial governments towards a sustainable Canadian Geospatial Data Infrastructure.